

REMARKS

Applicant has cancelled the Claims 7 and 8 without prejudice. In view of the amendments to the Claims, Applicant will discuss the Office Action in terms of only the Claims 1 through 6.

Examiner has objected to the Claims 7 and 8 because of certain informalities. Applicant has cancelled Claims 7 and 8 without prejudice.

The Examiner has rejected Claims 1 through 8 under 35 U.S.C. 103 as being obvious over Applicant's admitted prior art in view of Colbert, et al. stating that Applicant's admitted prior art teaches a conventional heat emitting probe comprising an AFM cantilever, a pyramid tip protruding from the cantilever 2, electrode films 5, 5c, 6 and 6c provided on both sides surfaces of the cantilever and the side surfaces of the pyramid tip 8 and a control circuit connected to the electrode films with the control circuit comprising a power supply for supplying an electric current to the tip via the electric films, but does not disclose the probe having a conductive carbon nanotube probe needle fastened to the pyramid tip; Colbert discloses an AFM probe comprising a cantilever having a pyramid tip thereon and wherein the tip has a conductive carbon nanotube probe needle fastened to the pyramid tip; and it would have been obvious to one of ordinary skill in the art to modify Applicant's admitted prior art in view of Colbert.

Applicant has carefully reviewed the rejection and would first like to make some general comments on the Examiner's rejection. In particular, Applicant respectfully submits that Applicant's admitted prior art relates to a device manufactured using semiconductor techniques and as such, it is difficult to reduce the curvature radius of the holder tip end to a value less than 10 nanometers and does not show or suggest anywhere therein that one would utilize carbon nanotubes. Still further, Colbert, et al. merely teaches a probe and does not show or suggest that it would be utilized with any kind of heating element.

With these general comments on the Examiner's rejection, Applicant would like to particularly respond to the rejection.

Applicant respectfully submits that the heat emitting probe discussed in the prior art of Applicant's Specification is constructed only by a cantilever for atomic force by microscopy (AFM) and the voltage for heating is applied to the pyramid portion of the cantilever by electrode films formed on the cantilever surface. As a result, Applicant respectfully submits that Applicant's submitted prior art does not disclose the utilization of a conductive nanotube probe

needle, a heat emitting body attached to a conductive nanoprobe needle or the conducted nanotube lead wire, all as is admitted by the Examiner.

Applicant has further carefully reviewed Colbert, et al. and respectfully submits that Colbert, et al. merely discloses a nanotube probe which is made by fastening nanotubes on the surface of a cantilever for an AFM and does not teach that a utilization of a heat emitting probe having conducting nanotube lead wires. In contrast thereto, in Applicant's invention, it is possible to apply directly the voltage to the heat emitting body by means of the conductive nanotube lead wire. As a result, by using a conductive nanotube lead wire, the electrical construction for passing the current through the heat emitting body can be made simply based upon the flexibility of conductivity of nanotube lead wires.

Still further, Applicant respectfully submits that even if it is assumed that the nanotube probe of Colbert, et al. is used for a conventional heat emitting probe, the heat emitting body attached on the surface of the nanotube needle and electrodes for applying the heating voltage thereto would be required to make the heat emitting probe function. As a result, Applicant respectfully submits that it would be required to connect a lead wire for applying the heating voltage to the heat emitting body because the heat emitting body is formed at the local part of the surface of the nanotube needle. However, Applicant respectfully submits that a conventional lead wire would be very large relative to the nanotube needle and the heat emitting body attached thereto. As a result, Applicant respectfully submits that it would be all but impossible to connect the conventional lead wire to the heat emitting body.

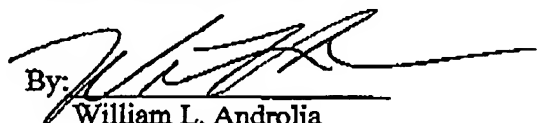
In view of the above, Applicant respectfully submits that the combination suggested by the Examiner is not only not Applicant's invention, but also not suggested by the art. Therefore, Applicant respectfully submits that the Claims 1 through 6 are not obvious over Applicant's admitted prior art in view of Colbert, et al.

In view of the above, it is respectfully requested that this Amendment be entered, favorably considered and the case passed to issue.

Please charge any additional costs incurred by or in order to implement this Amendment or required by any requests for extensions of time to KODA & ANDROLIA DEPOSIT ACCOUNT NO. 11-1445.

Respectfully submitted,

KODA & ANDROLIA

By:   
William L. Androlia  
Reg. No. 27,177

2029 Century Park East  
Suite 1430  
Los Angeles, CA 90067  
Tel: (310) 277-1391  
Fax: (310) 277-4118

Certificate of Transmission

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office Fax No. (703) 872-9306 on December 1, 2004.

William L. Androlia

Name

Signature

12/1/2004

Date